

# THE TAXONOMY OF SOME INDO-PACIFIC MOLLUSCA WITH DESCRIPTIONS OF NEW SPECIES

W. O. CERNOHORSKY  
AUCKLAND INSTITUTE AND MUSEUM

*Abstract.* A new ovulid *Primovula* from the Red Sea and a subspecies of the Miocene *Mitra sowerbyi* d'Orbigny, are described as new to science. Three species of Mitridae are re-assigned to the genera *Mitra*, *Subcancilla* and *Neocancilla*. An aberrant form of *Cerithium (Pseudovertagus) aluco* (Linnaeus) and a recently collected specimen of *Bursa (Colubrellina) condita* (Gmelin), are discussed and illustrated.

Through the courtesy of Dr. B. Wilson from the Western Australian Museum, Perth, the writer received all mitrid molluscs collected by the "Mariel King Memorial Moluccas Expedition 1970" for examination. Supplementary material was received from Dr. J. Knudsen, Universitetets Zoologiske Museum, Copenhagen, and Mr. V. Dan, Manila, Philippines. Examination of specimens and radula anatomy necessitates several generic re-assignments in the Mitridae, and the description of a living subspecies of *Mitra sowerbyi* d'Orbigny, believed to have been extinct since the late Miocene.

## Family MITRIDAE

Genus *Mitra* Lamarck, 1798

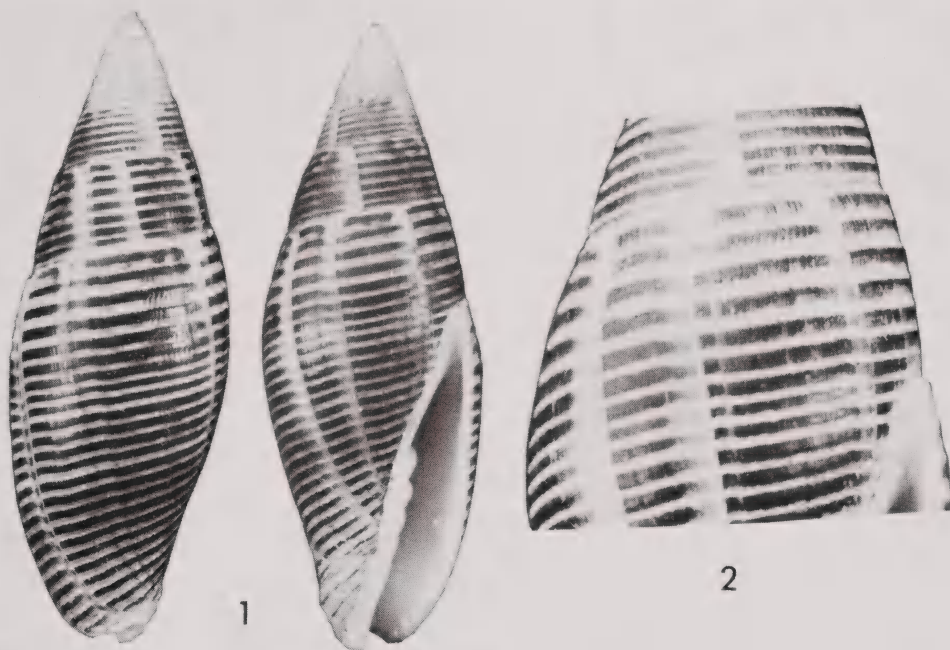
Subgenus *Nebularia* Swainson, 1840

*Nebularia* Swainson, 1840, Treat. Malacology, p. 130. Type species by SD (Herrmannsen, 1847) *Mitra contracta* Swainson, 1820. Recent, Indo-Pacific.

***Mitra (Nebularia) sowerbyi kingae*** subsp. n. (Figs. 1-2,6)

Shell moderate in size, elongate-ovate and slightly cylindrical, sutures moderately impressed, teleoconch of  $6\frac{1}{2}$  almost flat-sided whorls, glassy-white nuclear whorls partly missing. First 2 post-nuclear whorls slightly convex, body whorl distinctly convex and slightly inflated anteriorly to the body whorl suture. Spiral sculpture consisting of fairly regular, flat and feebly elevated cords which number 7 on the spire whorls and 29 on the body whorl. Longitudinal sculpture of fine and crowded axial striae which override spiral cords and produce axial lirae and intervening pits in the narrow interspaces; longitudinal sculpture weakens below periphery of the body whorl where only crowded, small pits appear in the interspaces. Aperture longer than the spire, narrow, smooth within; outer lip elongate and convex, thickened and minutely crenulate at the margin. Columella calloused, and with 5 prominent oblique folds which decrease in size anteriorly; siphonal canal straight, siphonal notch distinct. Base colour off-white, in parts creamy-white, spiral cords dark reddish-brown, colouring interrupted in places by white longitudinal growth-marks; aperture and columella porcellaneous-white, first 2 post-nuclear whorls white.

Radula typically mitrine but extremely small, only 7.2% of shell-length. Rachidians wider than high and with 7 regular cusps, laterals about 1.6 x the width of rachidians and with 11 cusps which decrease in size towards the outer margin (Fig. 6).



Figs. 1-2. *Mitra (Nebularia) sowerbyi kingae* subsp. n. Moluccas, Indonesia, 18-22 fathoms (33-40 metres). 1. Holotype WAM Lot No. 84 (1); length 34.6 mm. 2. Sculptural detail of holotype.

TYPE LOCALITY: Station AW-I, Haul 6, off west coast of Wasir Island, west Wokam, Aru Isds., Moluccas, Indonesia, Latitude  $5^{\circ}30's$ , Longitude  $134^{\circ}12'$ , in 18-22 fathoms (33-40 metres), sand and shell-rubble.

*Holotype*: Presently lodged in the Western Australian Museum, Perth, Lot No. 84 (1); length 34.6 mm, height of aperture 19.8 mm (Figs. 1-2). Collected by the "Mariel King Memorial Moluccas Expedition 1970", 15.VI.1970. Type to be transferred to an appropriate Institution in Indonesia at a later date.

The living subspecies *kingae* differs from the Indian Miocene *Mitra sowerbyi sowerbyi* d'Orbigny, 1852, in being more slender, with a higher spire, more numerous spiral cords, broader interstices between cords, a narrower aperture and less widely spaced columellar folds. The Indonesian Miocene *M. sowerbyi sedanensis* Martin, 1906, is broader and more inflated, the whorls are convex, the sculpture is finer, the interspaces and cords are more thread-like, the aperture is wider and the columellar folds thinner and more widely spaced.

The new subspecies is named in memory of the late Mrs. M. E. King, in recognition of her extensive field contribution to Indo-Pacific malacology.



Figs. 3-5. 3. *Subcancilla flammea* (Quoy & Gaimard). Tg Lelar, Trangan, Aru I., Moluccas, 12 fathoms (22 metres); length 27.8 mm. 4. *Neocancilla circula* (Kiener). Singapore, Malaysia; length 32.6 mm. 5. *Mitra carbonacea* (Hinds). Bay of Rufisque, West Africa; length 19.7 mm.

**Mitra carbonacea** (Hinds, 1844)

(Figs. 5, 7)

1844. *Imbricaria carbonacea* Hinds, Zool. Voy. "Sulphur", p. 41, pl. 11, figs. 9, 10; 1956, Knudsen, Atlantide Rept. No. 4: 70; 1970, Cernohorsky, Bull. Auckland Inst. Mus. No. 8: 43 (name published October 1844).



1844. *Mitra citrina* Reeve, Conch. Iconica, vol. 2, pl. 27, figs. 215a, b (name published December 1844).
1853. *Mitra rollandi* Bernardi, J. Conchyl. 4: 67, pl. 2, figs. 6, 7.

Originally described by Hinds (1844) from Agulhas Bank, Cape of Good Hope, the species has never been recorded from South African waters but has been found living in West Africa. The distribution of the species is from Mossamedes, Angola, to Port Etienne, Mauritania.

Described in the genus *Imbricaria* Schumacher, and assigned to this genus by subsequent authors on the basis of shell-morphology, a re-assignment to the genus *Mitra*, subfamily Mitrinae, is necessary on the basis of radular characters. A specimen from Gorée, Senegal (leg. G. Thorson, Zool. Mus. Copenhagen) had a typically mitrine dentition with a 7-cuspid rachidian and 19-cuspid lateral which is 2.75 x as broad as the rachidian (Fig. 7).

The syntypes of *Mitra citrina* Reeve, in the British Museum (Natural History), no. 1967719, are the same species as *M. carbonacea*.

#### Genus **Subcancilla** Olsson & Harbison, 1953

*Subcancilla* Olsson & Harbison, 1953, Acad. Nat. Sci. Philadelphia Mon. No. 8: 190. Type species by OD *Mitra sulcata* Swainson in Sowerby, 1825.

#### **Subcancilla flammea** (Quoy & Gaimard, 1833)

1833. *Mitra flammea* Quoy & Gaimard, Voy. L'Astrolabe, 2: 659, pl. 45bis, figs. 23-25.
1844. *Mitra flammigera* Reeve, Conch. Iconica, vol. 2, pl. 22, figs. 173a, b.
1965. *Mitra (Cancilla) flammigera* Reeve, Cernohorsky, Veliger, 8: 105, pl. 15, fig. 30.

The species has been variously assigned to *Mitra*, *Cancilla* or *Ziba*, but the radula characters are those of *Subcancilla*. The rachidian has 5-6 long and slender cusps on a broad but low base; the laterals have 4-5 cusps, with the inward pointing cusp very large, and occasionally a small accessory denticle on the cutting edge.

The morphologically similar species from Mauritius and the Fiji Islands, figured by the writer as *M. flammea* (Cernohorsky, 1965, pl. 15, fig. 29), is the species *M. intersculpta* Sowerby, 1870. The radula of this species (Cernohorsky 1970, fig. 83) is prominently different from the radula of *Subcancilla flammea* despite the close resemblance of the two species in shell-morphology.

#### Genus **Neocancilla** Cernohorsky, 1966

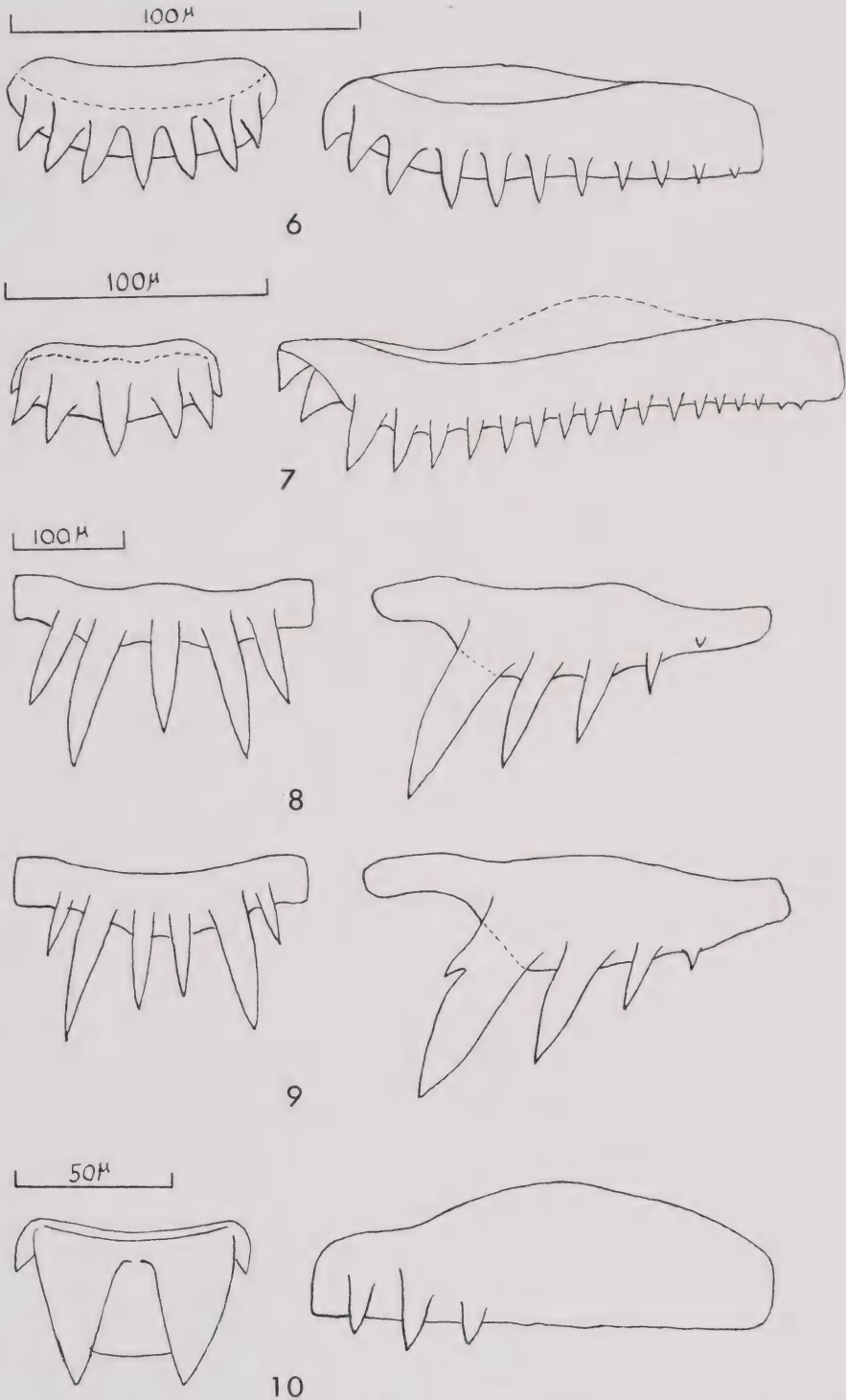
*Neocancilla* Cernohorsky, 1966, Veliger, 9: 110. Type species by OD *Voluta papilio* Link, 1807.

#### **Neocancilla circula** (Kiener, 1838)

(Figs. 4, 10)

1838. *Mitra circula* Kiener, Spéc. gén. icon. coq. viv. 3: 21, pl. 5, fig. 13.
1844. *Mitra circulata* Reeve, Conch. Iconica, vol. 2, pl. 11, fig. 77.
1853. *Mitra rufescens* A. Adams, Proc. Zool. Soc. London, for 1851, p. 137.
1920. *Mitra burnupiana* Cooke, Proc. Zool. Soc. London, for 1819, p. 415 (*nom. nud.*) [description of radula].





Figs. 6-10. Half-row of radulae. 6. *Mitra (Nebularia) sowerbyi kingae* subsp. n. from holotype. 7. *M. carbonacea* (Hinds). Gorée, Senegal, West Africa, 16-20 metres. 8, 9. *Subcancilla flammea* (Quoy & Gaimard). Tg Lelar, Trangan, Aru I., Moluccas, 12 fathoms (22 metres). 10. *Neocancilla circula* (Kiener). Tg Lelar, Trangan, Aru I., Moluccas, 6-8 fathoms (11-15 metres).

1920. *Mitra burnupiana* Cooke, Proc. Malac. Soc. London, 14: 114, figs. 1, 2.  
 1965. *Mitra (Cancilla) incarnata* Reeve, Cernohorsky, Veliger, 8: 106, pl. 16, figs. 39, 39a (non Reeve, 1845).

Examination of Kiener's type-specimens of *M. circula* in the Muséum d'Histoire Naturelle, Geneva, and radulae of recently collected specimens from the Moluccas, assist in establishing the identity, synonymy and generic placement of the species. *M. circula* is characterized by the elevated but rounded spiral cords and broad interspaces which contain a net-like sculpture of compressed axial striae and overriding spiral threads. The colour is generally fawn, paling towards the sutures, but some individuals are uniformly brown, others creamy-white and banded in the centre.

The radula has rectangular rachidians with 2 large cusps and 2 minute side-cusps; the laterals are 2 x as broad as the rachidians and have only 3 cusps, plus occasionally another 2 very weak cusps, and the remainder of the tooth is bare.

### Family CERITHIIDAE

Genus **Cerithium** Bruguière, 1789

Subgenus **Pseudovertagus** Vignal, 1904

*Pseudovertagus* Vignal 1904, Bull. Mus. d'Hist. Nat. Paris, 10: 358. Type species by M *Murex aluco* Linnaeus, 1758.

**Cerithium (Pseudovertagus) aluco** (Linnaeus, 1758) (Fig. 11)

1758. *Murex aluco* Linnaeus, Syst. Naturae, ed. 10, p. 755.

A most unusual and aberrant form of the species, probably pathological in origin, has recently been collected at Mainbon, Sulu, Philippines, by Mr. V. Dan. This aberrant form, which barely resembles normal individuals of the species, is greatly depressed and inflated, with a broad and flaring aperture, and lacks the usual axial ribs on the spire whorls and prominent nodulose knobs on the later whorls. The specimen has, however, retained the bi-angulate body whorl, typical colouring and apertural features, but the spiral sculpture is more prominent than in normal individuals.

### Family BURSIDAE

Genus **Bursa** Röding, 1798

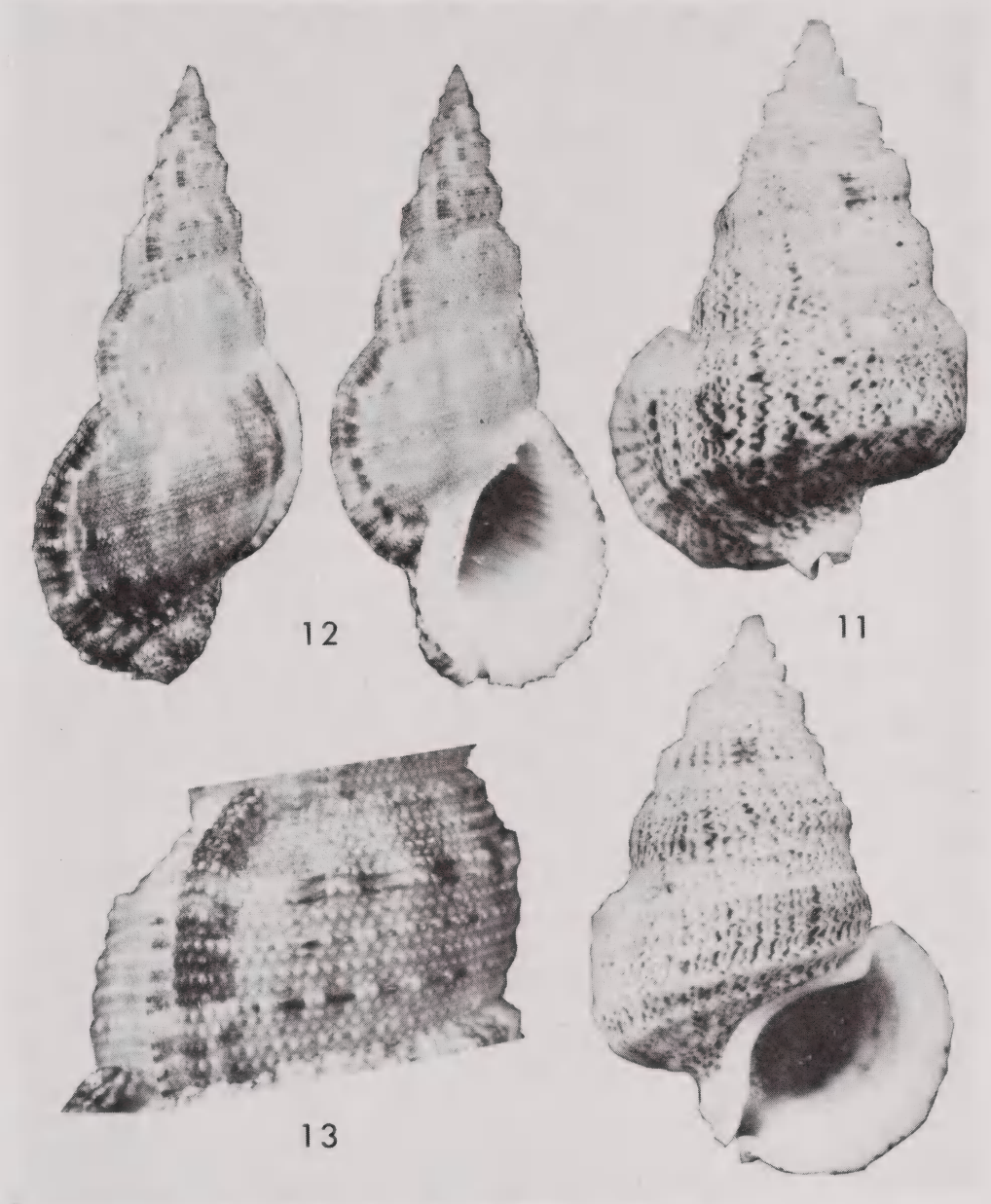
Subgenus **Colubrellina** Fischer, 1884

*Colubrellina* Fischer, 1884, Man. Conchyliologie, p. 656. Type species by M *Ranella candidata* Lamarck = *Murex conditus* Gmelin, 1791.

**Bursa (Colubrellina) condita** (Gmelin, 1791) (Figs. 12-13)

1788. "*Murex candidatus*" Chemnitz, Syst. Conch. Cabinet, 10: 254, pl. 162, figs. 1544, 1545 (non, binom.).

1791. *Murex corditus* Gmelin, Syst. Naturae, ed. 13, p. 3565 (refers to Chemnitz, *op. cit.*, figs. 1544, 1545).  
 1798. *Tritonium candidatum* Röding, Mus. Boltenianum, p. 126 (refers to Chemnitz, *op. cit.*, figs. 1544, 1545).  
 1817. *Colubraria granulata* Schumacher (*pars*), Essai nouv. syst., p. 251.



Figs. 11-13. 11. *Cerithium (Pseudovertagus) aluco* (Linnaeus). Aberrant form. Mainbon, Sulu, Philippines, intertidal; length 47.3 mm. 12, 13. *Bursa (Colubrellina) condita* (Gmelin). Borongan, Eastern Samar, Philippines, intertidal; length 113.2 mm. 12. Dorsal and ventral views. 13. Sculptural detail of penultimate whorl.



This rare species which is seldom mentioned or illustrated in malacological literature, has been described from unknown locality and was subsequently reported from Tahiti and Japan. A form of this species or a geographical subspecies, was recently described as *Bursa(Colubrellina)natalensis* Coelho & Matthews, 1970, from Brazil.

The illustrated, 113.2 mm long specimen from the Philippines, has  $8\frac{1}{2}$  mature, subangulate whorls and a sculpture of 21 granulose cords on the penultimate whorl and about 50 cords on the body whorl. Two of these cords, rarely one or three, are more prominent and elevated and studded with spaced nodules, which are usually arranged in groups of 4 to 6 nodules. The aperture is lirate, the outer lip has 24 denticles and the columella is wrinkled and plicate on the prominent callus-shield.

The species is generally cited as *Bursa candidata* (Lamarck, 1822), but apart from the prior *candidata* of Röding, *Murex conditus* Gmelin, has chronological priority.

#### Family OVULIDAE

##### Genus *Primovula* Thiele in Kükenthal & Krumbach, 1925

*Primovula* Thiele in Kükenthal & Krumbach, Handb. Zoologie, vol. 5, p. 88. Type species by OD *Amphiperas beckeri* Sowerby, 1900.

##### *Primovula eilatensis* sp.n.

(Figs.14-15)

Shell very small, 10.0-11.0 mm in length, elongate-fusiform, width 29-32% of length, yellow in colour, margin of outer lip and columellar carina orange. Dorsum with numerous fine spiral striae throughout its entire length (paratype), or with the centre of the dorsum smooth and spiral striae confined to the extremities only (holotype); the posterior third of the dorsum has an obsolete transverse carina which is indicated only by a slight swelling, but varies in prominence in individuals. Outer lip bi-angulate, descending almost vertically between the angulations, and slightly constricted at the anterior third, lip moderately broad, flattened, weakly concave and angled towards the aperture in profile; the lip is toothed along its entire length, denticles irregular, often intercalate, and numbering 44 (holotype) to 58 (paratype), teeth reaching the margin of the outer lip and continue for a short distance up the margin. Aperture narrow, widening anteriorly, funiculum with 9-10 plicae, columella with a longitudinal carina which is obsoletely denticulate, denticles numbering about 30 in the holotype but are weak and uncountable in the paratype. Anterior outlet with a terminal ridge, columella smooth in the holotype but finely obliquely striate in the paratype, fossula concave, projecting and completely smooth.

TYPE LOCALITY: Eilat, Gulf of Aqaba, Israel, in 15 metres on *Clathraria rubronudosa*, *Suberogorgia* sp. and *Gorgonia* sp. (Prof. L. Fishelson, *in litt*).

*Holotype*: In the Department of Zoology, Tel-Aviv University, Tel Aviv, Israel, No NS-8899; length 11.2 mm, width 3.3 mm, (Fig. 14).

*Paratype*: Paratype No. 1, length 10.4 mm, width 3.3 mm. in Auckland Institute and Museum, Auckland; juvenile paratype No. 2, length 5.4 mm, in Tel Aviv University.



Figs. 14-15. *Primovula eilatensis* sp. n. Eilat, Gulf of Aqaba, 15 metres. 14. Holotype Tel-Aviv University No. NS-8899; length 11.2 mm. 15. Paratype AIM; length 10.4 mm.

*Primovula eilatensis* is one of the most elongate-fusiform ovuline species on record. The species resembles *P. striatula* (Sowerby, 1828), but this species is considerably broader (width 40-50% of length), less elongate-fusiform and broader at its posterior third, the teeth on the outer lip are developed only on the posterior half, become obsolete anteriorly and do not reach the margin, the aperture is narrower and does not widen anteriorly, the outer lip is not biangulate, the dorsal carina is more prominent and the species is higher in profile.

*Primovula horimasaru* C. Cate, 1971, is similar in form, but has a twisted appearance, and lacks a bi-angulate outer lip which is also edentulous. *P. virgo* C. Cate, 1971, is broader, the outer lip is not bi-angulate, and instead of being flat is rounded and only weakly dentate along two-thirds of its length.

*Acknowledgements.* I would like to thank Dr B. Wilson, Western Australian Museum, Perth, Dr J. Knudsen, Universitetets Zoologiske Museum, Copenhagen, Prof. Dr A. Barash and Prof. L. Fishelson, Tel-Aviv University, Tel Aviv, and Mr V. Dan, Manila, Philippines, for the opportunity to examine molluscan material in their respective care.

#### BIBLIOGRAPHY

AZUMA, M. and C. N. CATE

1971 Sixteen new species and one new genus of Japanese Ovulidae (Gastropoda). *Veliger* 13 (3): 261-268, 2 pl., 8 textfigs. (most species described therein are *nomina nuda*).

CATE, C. N.

- 1971 Additions and corrections to two recent articles on Ovulidae (Gastropoda). *Veliger* 13 (4): 362-363, replacement plate.

CERNOHORSKY, W. O.

- 1965 The Mitridae of Fiji. *Veliger* 8: 70-160, pl. 13-23.  
1970 Systematics of the families Mitridae & Volutomitridae (Mollusca: Gastropoda). *Bull. Auckland Inst. Mus.* No. 8: 1-190, pl. 1-18, textfigs.

COELHO, A. C. S. and H. R. MATTHEWS

- 1970 Superfamilia Tonnacea. I. Familia Bursidae: *Bursa (Colubrellina) natalensis* sp. n. (Mollusca, Gastropoda). *Bol. Mus. Nac. Rio de Janeiro, Zool.* No. 279: 1-6, 3 figs.

HINDS, R. B.

- 1844-1845. *The zoology of the voyage of HMS Sulphur. Mollusca.* Pts. 1-3: 1-72, pl. 1-21. London.